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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,493	03/22/2004	Kun-ho Cho	Q74796	8391

23373 7590 02/07/2006

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EXAMINER	
NEGRON, ISMAEL	
ART UNIT	**PAPER NUMBER**
2875	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/805,493	CHO ET AL.
	Examiner	Art Unit
	Ismael Negron	2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Abstract

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

(1) if a machine or apparatus, its organization and operation;
(2) if an article, its method of making;
(3) if a chemical compound, its identity and use;
(4) if a mixture, its ingredients;
(5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

1. The abstract of the disclosure is objected to because it refers to purported merits. Correction is required. See MPEP § 608.01(b).

The Examiner respectfully suggests deleting the last sentence of the abstract.

Specification

2. The disclosure is objected to because of the following informalities:

- line 4 of paragraph 07 should read "*first and fourth dichroic filters ~~112~~ **109** and 141 and between the third and fourth dichroic filters*"; and
- line 6 of paragraph 44 should read "*80 to have a Gaussian distribution **with respect to direction y**.*"

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by HASHIMOTO (U.S. Pat. Pub. No. 2002/0024740).

4. HASHIMOTO discloses an illumination apparatus having:

- **a light source (as recited in Claim 1)**, Figure 1, reference number 12;
- **a first cylindrical lens array (as recited in Claim 1)**, Figure 1, reference number 14;
- **the first lens array including a plurality of first cylindrical lens cells (as recited in Claim 1)**, paragraph 30, lines 2-5;
- **the first lens cells dividing light emitted from the light source into a plurality of beams (as recited in Claim 1)**, as evidenced by Figure 1;
- **a second cylindrical lens array (as recited in Claim 1)**, Figure 1, reference number 14;
- **the second lens array including a plurality of second cylindrical lens cells (as recited in Claim 1)**, paragraph 30, lines 2-5;
- **the second lens cells combining the beams divided by the first lens cells in a same direction (as recited in Claim 1)**, as evidenced by Figure 1;

- **a relay lens (as recited in Claim 1)**, Figure 1, reference number 19;
- **the relay lens relaying the beams combined by the second lens cells so that a majority of the beams concentrate on an incident light axis to have a Gaussian distribution (as recited in Claim 1)**, as evidenced by Figure 1;
- **a first cylinder lens (as recited in Claim 2)**, Figure 1, reference number 16;
- **the first lens being disposed between the light source and the first cylindrical lens array (as recited in Claim 2)**, as seen in Figure 1;
- **the first lens converging the light emitted from the light source (as recited in Claim 2)**, as seen in Figure 1;
- **a second cylinder lens (as recited in Claim 2)**, Figure 1, reference number 17;
- **the second lens being disposed between the first and second cylindrical lens arrays or behind the second cylindrical lens array (as recited in Claim 2)**, as seen in Figure 1;
- the second lens collimating incident light (as recited in Claim 2); and

- **the first and second lens cells being arranged in a direction perpendicular to a thickness direction of the first and second lenses (as recited in Claim 3)**, as seen in Figure 1.

5. Claims 1, 3-5, 7-11, 13, 14 and 16-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's Admitted Prior Art (AAPA).

6. AAPA discloses a projection system having:

- **a light source (as recited in Claim 1)**, Figure 1, reference number 100;
- **a first cylindrical lens array (as recited in Claim 1)**, Figure 1, reference number 102;
- **the first lens array including a plurality of first cylindrical lens cells dividing light emitted from the light source into a plurality of beams (as recited in Claim 1)**, as evidenced by Figure 1;
- **a second cylindrical lens array (as recited in Claim 1)**, Figure 1, reference number 104;
- **the second lens array including a plurality of second cylindrical lens cells combining the beams divided by the first lens cells in a same direction (as recited in Claim 1)**, as evidenced by Figure 1;

- **a relay lens (as recited in Claim 1)**, Figure 1, reference number 107;
- **the relay lens relaying the beams combined by the second lens cells so that a majority of the beams concentrate on an incident light axis to have a Gaussian distribution (as recited in Claim 1)**, as evidenced by Figure 1;
- **the first and second lens cells being arranged in a direction perpendicular to a thickness direction of the first and second lenses (as recited in Claim 3)**, as seen in Figure 1;
- **a polarization conversion system (as recited in Claim 4)**, Figure 1, reference number 105;
- **the polarization conversion system being disposed on a light path between the first cylinder lens and the relay lens (as recited in Claim 4)**, as seen in Figure 1;
- **the polarization conversion system converting incident light into light having a single polarization (as recited in Claim 4)**, as evidenced by paragraph 5;
- **a color separator for separating light emitted from the illumination system into a plurality of color beams (as recited in Claim 5)**, as seen in Figure 1;
- **a scrolling unit for scrolling the color beams obtained by the color separator (as recited in Claim 5)**, as seen in Figure 1;

- **a light valve (as recited in Claim 5)**, Figure 1, reference number 130;
- **the light valve processing the color beams scrolled by the scrolling unit to form a color image (as recited in Claim 5)**, as seen in Figure 1;
- **the color separator including a first dichroic filter (as recited in Claim 7)**, Figure 1, reference number 109;
- **the first filter reflecting a first color beam of light emitted from the illumination system, and transmits other color beams (as recited in Claim 7)**, paragraph 5;
- **a second dichroic filter (as recited in Claim 7)**, Figure 1, reference number 112;
- **the second filter reflecting a second color beam of the color beams transmitted by the first dichroic filter, and transmits a third color beam (as recited in Claim 7)**, paragraph 5;
- **the scrolling unit including a plurality of prisms rotatably disposed on light paths along which the color beams travel (as recited in Claim 8)**, Figure 1, reference numbers 114, 135 and 142;
- **color scrolling being achieved by rotations of the prisms (as recited in Claim 8)**, paragraph 6;

- **a plurality of slits (as recited in Claim 9)**, Figure 1, reference numbers 113, 134 and 143;
- **the slits being disposed on paths along which the color beams travel (as recited in Claim 9)**, as seen in Figure 1;
- **the slits controlling the divergence angles of the color beams (as recited in Claim 9)**, paragraph 10;
- **the first and second cylindrical lens cells are arranged in a direction parallel to a color separation direction (as recited in Claim 10)**, as evidenced by Figure 1;
- **at least one light path changer (as recited in Claim 11)**, Figure 1, reference numbers 118 and 133; and
- **the light path changer directing the color beams toward the light valve (as recited in Claim 11)**, as seen in Figure 1.

7. Method claims 13, 14 and 16-19 were considered as inherently disclosed by structural limitations of AAPA, as detailed above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4, 6, 12, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over HASHIMOTO (U.S. Pat. Pub. No. 2002/0024740) in view of Applicant's Admitted Prior Art (AAPA).

9. HASHIMOTO discloses an illumination apparatus having:

- **a light source (as recited in claims 1 and 5)**, Figure 1, reference number 12;
- **a first cylindrical lens array (as recited in claims 1 and 5)**, Figure 1, reference number 14;
- **the first lens array including a plurality of first cylindrical lens cells (as recited in claims 1 and 5)**, paragraph 30, lines 2-5;
- **the first lens cells dividing light emitted from the light source into a plurality of beams (as recited in claims 1 and 5)**, as evidenced by Figure 1;
- **a second cylindrical lens array (as recited in claims 1 and 5)**, Figure 1, reference number 14;
- **the second lens array including a plurality of second cylindrical lens cells (as recited in claims 1 and 5)**, paragraph 30, lines 2-5;

- **the second lens cells combining the beams divided by the first lens cells in a same direction (as recited in claims 1 and 5)**, as evidenced by Figure 1;
- **a relay lens (as recited in claims 1 and 5)**, Figure 1, reference number 19;
- **the relay lens relaying the beams combined by the second lens cells so that a majority of the beams concentrate on an incident light axis to have a Gaussian distribution (as recited in claims 1 and 5)**, as evidenced by Figure 1;
- **a first cylinder lens (as recited in claims 2 and 6)**, Figure 1, reference number 16;
- **the first lens being disposed between the light source and the first cylindrical lens array (as recited in claims 2 and 6)**, as seen in Figure 1;
- **the first lens converging the light emitted from the light source (as recited in claims 2 and 6)**, as seen in Figure 1;
- **a second cylinder lens (as recited in claims 2 and 6)**, Figure 1, reference number 17;
- **the second lens being disposed between the first and second cylindrical lens arrays or behind the second cylindrical lens array (as recited in claims 2 and 6)**, as seen in Figure 1;

- the second lens collimating incident light (as recited in Claim 2); and
- **the first and second lens cells being arranged in a direction perpendicular to a thickness direction of the first and second lenses (as recited in Claim 3)**, as seen in Figure 1.

10. HASHIMOTO discloses all the limitations of the claims, except:

- a polarization conversion system (as recited in claims 4 and 12);
- the polarization conversion system being disposed on a light path between the first cylinder lens and the relay lens (as recited in Claim 4);
- the polarization conversion system converting incident light into light having a single polarization (as recited in Claim 4);
- a color separator for separating light emitted from the illumination system into a plurality of color beams (as recited in Claim 5);
- a scrolling unit for scrolling the color beams obtained by the color separator (as recited in Claim 5);
- a light valve (as recited in Claim 5); and
- the light valve processing the color beams scrolled by the scrolling unit to form a color image (as recited in Claim 5).

11. AAPA discloses a projection system having:

- **a light source (as recited in claims 1 and 5)**, Figure 1, reference number 100;
- **a first cylindrical lens array (as recited in claims 1 and 5)**, Figure 1, reference number 102;
- **a second cylindrical lens array (as recited in claims 1 and 5)**, Figure 1, reference number 104;
- **a relay lens (as recited in claims 1 and 5)**107;
- **a polarization conversion system (as recited in claims 4 and 12)**, Figure 1, reference number 105;
- **the polarization conversion system being disposed on a light path between the first cylinder lens and the relay lens (as recited in claims 4 and 12)**, as seen in Figure 1;
- **the polarization conversion system converting incident light into light having a single polarization (as recited in claims 4 and 12)**, as evidenced by paragraph 5;
- **a color separator for separating light emitted from the illumination system into a plurality of color beams (as recited in Claim 5)**, as seen in Figure 1;
- **a scrolling unit for scrolling the color beams obtained by the color separator (as recited in Claim 5)**, as seen in Figure 1;
- **a light valve (as recited in Claim 5)**, Figure 1, reference number 130; and

- **the light valve processing the color beams scrolled by the scrolling unit to form a color image (as recited in Claim 5)**, as seen in Figure 1.

12. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use the illumination apparatus of HASHIMOTO in the projection system of AAPA, to obtain a more powerful, yet easier to adjust, projection system at a reduced manufacturing cost, as per the teachings of HASHIMOTO (see paragraph 6).

13. Method claims 15 and 20 considered as inherently disclosed by the patented structure of HASHIMOTO (as detailed in Section 9, above), or suggested by the combined teachings of HASHIMOTO and Applicant's Admitted Prior Art (AAPA) (as detailed above).

Relevant Prior Art

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Little (U.S. Pat. 3,484,599), **Browning** (U.S. Pat. 3,555,987), **van den Brandt et al**. (U.S. Pat. 5,098,184), **Kodama et al**. (U.S. Pats. 6,212,013 and 6,611,381), **Sugawara et al**. (U.S. Pat. 6,431,727), **Itoh** (U.S. Pat. 6,513,953), **Rekow** (U.S. Pat.

Pub. 2003/0128543), **Wichner et al.** (U.S. Pat. 6,688,747) and **Akiyama** (U.S. Pat. 6,688,756) disclose illumination devices for projection systems, such devices including a light source, first and second cylindrical lens arrays, and a relay lens. Some also include a first cylinder lens disposed between the light source and the first array and a second cylinder lens behind the second cylindrical lens array.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ismael Negron whose telephone number is (571) 272-2376. The examiner can normally be reached on Monday-Friday from 9:00 A.M. to 6:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra L. O'Shea, can be reached on (571) 272-2378. The facsimile machine number for the Art Group is (571) 273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications maybe obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, go to http://pair-direct.uspto.gov. Should you

have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) toll-free at 866-217-9197.

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